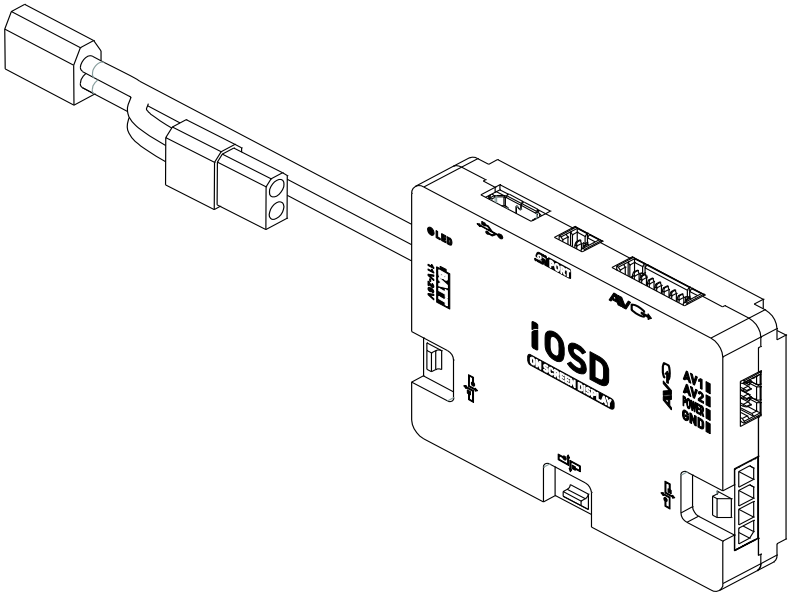
# iOSD (On Screen Display)

# User Manual

**V1.0**

**2012-10-11**

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# Disclaimer

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# Introduction

DJI iOSD is specially designed for DJI autopilot system during the FPV flight or other aero-modeling activates. DJI iOSD can transmit video and iOSD information in real time, which will help you to obtain the aircraft status information during a FPV flight. It can display power voltage, flight velocity, height, distance from the home point, horizontal attitude, GPS satellite number, etc. iOSD and video information are superposed on the receiver, making iOSD data clearly visible and bringing you a more involved flight experience.

DJI iOSD should be used in conjunction with a DJI autopilot system. It supports two video input sources under PAL or NTSC mode, which can be selected remotely by an R/C transmitter switch. The R/C TX switch can also change the wireless video transmitter channel remotely when user uses the wireless video transmitter specified by DJI. The iOSD supports online upgrades. The iOSD is built-in BEC, which is on the one hand for the power supply of the camera, on the other hand for the power supply of the main controller to improve the power supply reliability of the main controller.

Specified autopilot systems for the iOSD

| **Status** | **Autopilot system** |
|---|---|
| Supported | WKM |
| Not yet supported | WKH、ACE ONE、ACE WAYPOINT |

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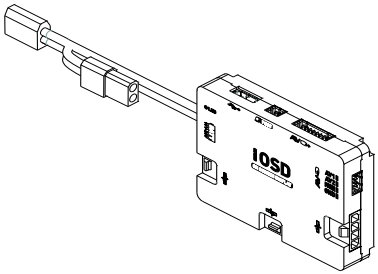
# In Box

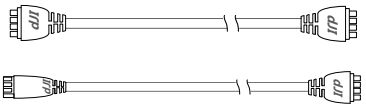
## iOSD Controller ×1

Connect the iOSD controller to your DJI autopilot system via CAN-Bus. It communicates with the main controller, receives data from the main controller, superimposes the data with the video image, and then transmits the whole information via a transmitter.




## CAN-Bus Cable ×2

Connect the iOSD to your autopilot system through a CAN-Bus cable.

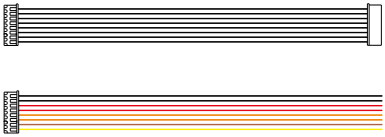


## Video Input Cable ×1

Connect the iOSD with video input source (i.e. camera or DJI Z15) for video input and power supply, with maximum current of 1A. You can use the cable for the connection in accordance with the wiring diagram.

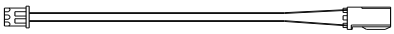
## Video Output Cable ×2

Only when you use the wireless video transmitter module specified by DJI, you can use the bi-port cable to connect the iOSD with the video transmitter module. Otherwise, you can use the one-port cable for your own connection in accordance with the wiring diagram.



## 2-PIN to 3-PIN Cable ×1

Connect the iOSD with the R/C receiver through this cable. When there are two video signal inputs, it is used for the selection of video signal sources. It can be used for the selection of AVL58 video channel.



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# Assembly

**STEP1.** Fix the iOSD controller on your aircraft.

**STEP2.** Connect the iOSD with the video signal source, wireless video TX module, DJI autopilot system and R/C receiver. Make sure the connection is correct in accordance with the wiring diagram.

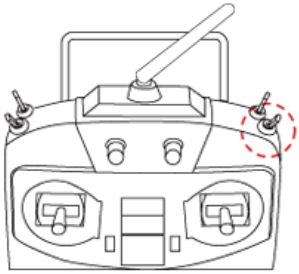
**STEP3.** Setup a 3-position switch on the R/C TX as the iOSD control switch.

**STEP4.** Connect your wireless video RX module with the display screen.

## 3-Position Switch Control

Choose a 3-position switch and make sure you connect the correct channel of the receiver to the iOSD switch port.

- Position -1→ Position -2, (hold position -2 for 1.5s): every toggle from Position -1 to Position -2 increases the channel of the wireless video transmitter module by 1 (from CH1 to CH8), only for the wireless video transmitter module specified by DJI.
- Position -3→ Position -2, (hold position -2 for 1.5s): toggle the switch to select the required video input, when there are two video inputs. Only the toggle from Position -3 to Position -2 can change the video input source.



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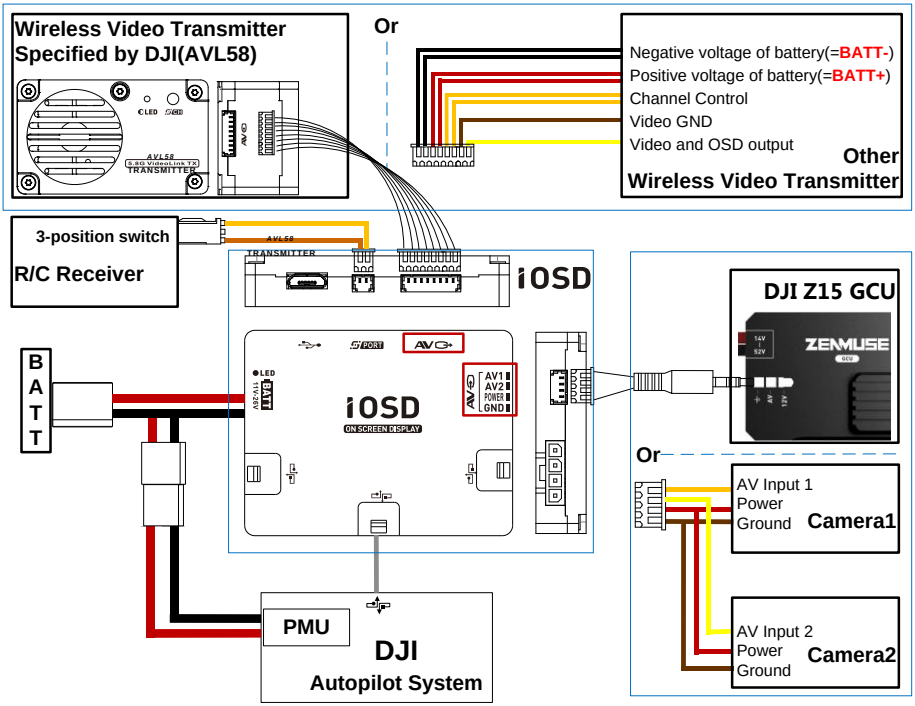



## Video Output Port

- If you use wireless video transmission module AVL58 specified by DJI, connect through the bi-port cable as shown.
- If you use your own module, please connect through the one-port cable according the pin description.
- **Channel Control :** Control signal for The video transmitter channel number (CH1.....CH8).If your video transmitter does not support this feature, then ignore this pin.

**Video and OSD output:** make sure this is correctly connected.

**Positive voltage of battery: =BATT+,** please check the input voltage of your own wireless video TX module, and make sure it is matched to the voltage of BATT, to prevent damage from your wireless video TX module.

## Video Input Port

- If you use the DJI Z15, please connect the OSD to the GCU of the Z15 through a bi-port cable as shown.
- If you use your own camera(s), please connect through the one-port cable according the pin description. AV1、AV2 : you can select the required input. AV1 is default. POWER : supply power for video input source such as a camera, with the maximum current of 1A.

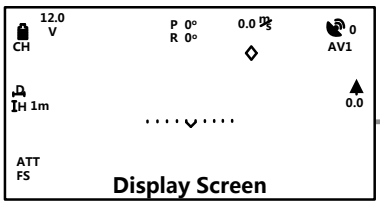
If battery is 3S Lipo then: Output Voltage = Input Votage

If 4S~6S then: Output Voltage=11.2V

Make sure the video input source is rated for this voltage, if not, and then please use a separate battery supply.

Aircraft End

Ground End

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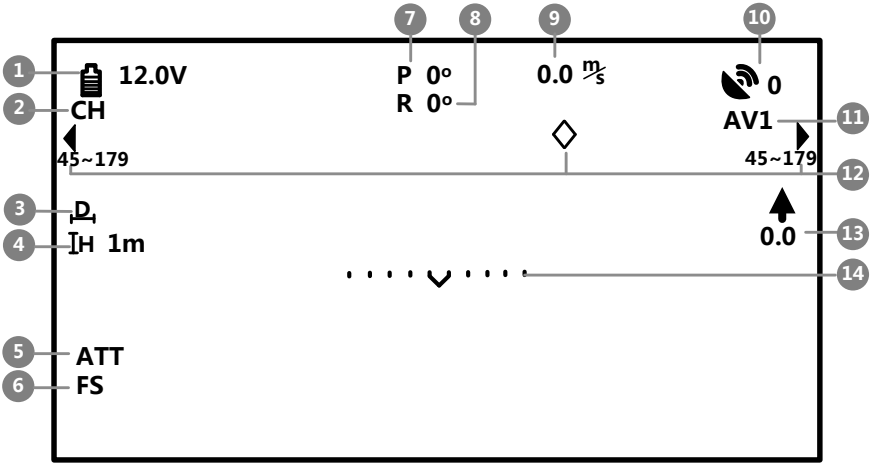
# Display Description

The iOSD information is displayed on the screen as shown below.




| NO | Function | Display | Description |
|---|---|---|---|
| 1 | Power voltage | 、、blink | The aircraft power battery voltage, unit in V.<br>● ：First level protection alarm<br>● blink：Second level protection alarm |
| 2 | Channel | **CH1、CH2、……CH8** | Wireless video transmitter channel selection. |
| 3 | Distance between aircraft and home points | | When the home point is successfully recorded, this item will show, unit in m. |
| 4 | Height | H | The vertical height between the aircraft and the take-off point, unit in m. |
| 5 | Control mode | **ATT、M、GPS** | The autopilot system control mode.<br>● ATT is Atti mode<br>● GPS is GPS Atti. mode<br>● M is Manual mode |
| 6 | Fail-safe mode | **FS、APT、GHome** | ● FS is in Fail-safe mode<br>● APT is in ground station mode<br>● GHome is in go home status |

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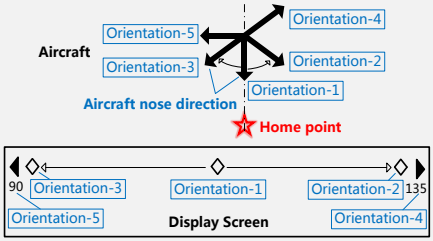
| | | | |
|---|---|---|---|
| 7 | Pitch attitude | P 0° | Positive value means the aircraft nose is up; negative value means the aircraft nose is down. |
| 8 | Roll attitude | R 0° | • Positive value means the aircraft is left.<br>• Negative value means the aircraft is right. |
| 9 | Flight velocity | 0.0m/s | The aircraft horizontal speed. |
| 10 | GPS satellite | 0 | Number of GPS satellites acquired. |
| 11 | Video input | AV1、AV2 | Video input source selected, AV1 or AV2 can be chosen. |
| 12 | Aircraft nose direction | ◇ ◀ ▶ | Display the relative angle between aircraft nose and home point. The aircraft nose is pointing to the home point when the icon ◇ is in the middle of the screen, this may help you to bring back the aircraft by distinguishing the aircraft nose direction.<br>For example, when the icon ◇ on your display screen is located in the Orientation-3 as shown in the following figure, you can change the aircraft nose direction through operating your R/C TX. When the icon arrives at the Orientation-1, your aircraft nose is heading the home point, which can help you pull your aircraft back to the home point easily.<br>  |
| 13 | Vertical velocity | 0.0 ▲ 0.0 ▼ | ▲ : Upward speed<br>▼ : Downward speed |

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| | | | |
|---|---|---|---|
| 14 | Attitude line | | Use attitude line for aircraft attitude observation<br>● craft up： <br>● craft down： <br>● craft left： <br>● craft right： |

# Test

Please use the following procedures to test your installation, in order to make sure the iOSD is working properly.

**STEP1.** Ensure batteries are fully charged for R/C transmitter, iOSD and all the other devices on your aircraft.

**STEP2.** Make sure all connections and wiring is correct and secure.

**STEP3.** Make sure the communication between the wireless video RX and TX modules is normal.

**STEP4.** Switch on the R/C transmitter, and power on the iOSD and autopilot system.

**STEP5.** Check the LED indicator on the iOSD. The iOSD is powered when the LED is on.

**STEP6.** If there are two video inputs, please select an input by toggling the TX 3-position switch; otherwise, please skip to the next step.

**STEP7.** If you use the wireless video RX and TX modules specified by DJI, please select the channel you require by toggling the TX 3-position switch; otherwise, please skip to next step.

**STEP8.** Observe the display screen to make sure the video and iOSD information are displaying on the screen.

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# Appendix

## Port Description

| | |
|---|---|
| BATT | Power Battery Input Port，input voltage range: 11V~26V |
| PORT | Control Signal Input Port，for wireless video module channel selection and video input source selection |
| AV-OUT | Video Signal Output Port<br>● AV-OUT：Video Signal Output, including both video and iOSD information<br>● AV- GND：Video Signal Ground<br>● UART： transmit the wireless channel control signal to the wireless video transmitter (For example AVL58)<br>● BATT+：Positive Voltage of Battery<br>● BATT-：Negative Voltage of Battery |
| AV-IN | Video Input Port，2 input sources are available, and the default setup is AV1<br>● AV1：Video Input Source 1<br>● AV2：Video Input Source 2<br>● POWER :11~13V, supply power for video input source with the maximum current of 1A<br>● GND：Ground |
| | Micro-USB Port：Connects the iOSD with PC for firmware upgrade |
| | CAN-Bus：Communication of the iOSD with autopilot system through CAN-Bus |
| **LED** | LED indicator for power |

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# Specifications

| | |
|---|---|
| **Performance Parameter** | |
| **Video Input Mode** | PAL/NTSC |
| **Video Output Mode** | PAL/NTSC |
| **Physical** | |
| **Temperature** | -20~70°C |
| **Size** | 52mm X 41mm X 11mm |
| **Weight** | 42g |
| **Hardware Supported** | |
| **Voltage** | 3S~6S |
| **Current (Typical Value)** | ● 51mA@25.2V<br>● 87mA@12.6V |
| **Rated Power** | 1.25W |
| **Controller Supported** | WKM |
| **Software Supported** | |
| **Built-in Functions** | ● iOSD Information Transmission<br>● Video Transmission , 2 Video Signal input Channels/Switchable<br>● Remote channel selection of the Wireless Video Transmitter Module, when using the video transmitter specified by DJI<br>● Built-in BEC: improve the reliability of power supply for the main controller<br>● DJI Z15 Supported |

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# Trouble Shooting

| No. | What | Why | How to |
|---|---|---|---|
| 1 | Only iOSD information, video signal loss. | Video input error. | Make sure the connection between iOSD controller and video input port is OK. |
| 2 | Only video signal, iOSD information loss. | Connection between iOSD controller and autopilot system error. | Make sure the connection between iOSD controller and DJI autopilot system is OK. |
| 3 | Both video signal and iOSD information loss. | Signal transmission error. | ● Make sure the Wireless Video Transmitter Channel Setting is correct.<br>● Make sure the communication between the video transmitter and the receiver is working correctly. |
| 4 | Both video signal and iOSD information loss. | The video signal cable to display screen is unconnected or short circuit. | Make sure the connection of video signal cable is OK. |

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